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Pupil Inquiry Behavior Analysis and Change Activity. Interim Project Report.

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This interim report discusses progress toward three major goals of the Pupil Inquiry Behavior Analysis and Change Activity: increased pupil inquiry, changed teacher behavior to facilitate pupil inquiry, and the development of a 32-week course of instruction to provide for these behavioral changes. Data currently available deals with the emotional climate in the classroom, with other data relating to cognitive behaviors is due for later report. Reported are behavioral changes noted to date, expected project products, and problems enocuntered thus far. Data reported was obtained using Flander's Interaction Analysis, whose categories are defined in Table I of the Appendix. Evidence strongly suggests behavioral changes are heading in the desired directions, although slowly. Products to date include the inservice teacher course, and a number of interaction response reports. Computer programs are being developed and tested for information feedback. Problems encountered have been a lack of anticipated video equipment, malfunctional audio tape recorders, lack of an on-board computer, and insufficient personnel and resources to accomplish the original project goals. Tables are appended. (Author/CJ)

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Interim Project Report

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PUPIL INQUIRY BEHAVIOR ANALYSIS AND CHANGE ACTIVITY
Interim Project Report

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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FOREWORD

The Pupil Inquiry Behavior Analysis and Change Activity is one of the Mid-continent Regional Educational Laboratory's efforts to increase self-directed inquiry among students. McREL defines self-directed inquiry as a process engaged in by a learner who is directing his own activities to attain increased understanding and ability to apply that understanding to an open number of related problems. This project is being conducted with fifteen biology teachers and approximately 500 biology students in Springfield, Missouri through the University of Missouri at Columbia. This report represents the first opportunity the Laboratory has had to report the effect of the program, based upon empirical evidence.

PUPIL INQUIRY BEHAVIOR ANALYSIS AND CHANGE ACTIVITY: PROGRESS TOWARD MAJOR GOALS

Progress toward three major goals of the Pupil Inquiry Behavior Analysis and Change Activity is reported in this document. These goals are: increased pupil inquiry, changed teacher behavior to facilitate pupil inquiry, and the development of a 32-week course of instruction to provide for these behavioral changes. It is expected that there will be significant shifts in pupil inquiry, self-directedness, and levels of cognition displayed in the classroom resulting from the inservice instruction. The instructional materials being developed center around verbal interaction in the classroom, and these materials are being fully developed prior to and during the administration of instruction. The verbal interaction being treated focuses upon the emotional climate in the classroom, the cognitive levels of thinking, and different types of investigative behaviors. Data is available at this time on the emotional climate in the classroom only, and it is hoped that the information reported herein provides a sufficient base for interested persons to formulate conclusions relating to project progress and to make necessary in-process decisions regarding the allocation of priorities. Data relating to cognitive and investigative behaviors will be reported in a subsequent report.

Reported herein are (a) behavioral change noted to date, (b) expected project products, and (c) problems encountered to date.

Behavioral Change

Behavioral change has been assessed in terms of a comparison between observed and expected behavior. It should be pointed out, again, that only

a small part of the data is being reported upon and that the most important part of the inquiry domain will be reported upon at a later time. The expected behavior represents a definition of classroom inquiry in terms of emotional climate and was defined as the ideal case. The definition of precise behavioral goals for classroom interaction appears to have been a bold step, as we have been unable to find examples of where others have approached the problem in a similar fashion. More often, educators and educational researchers have been satisfied with any kind of change. We are interested in change relating to high inquiry, high self-directedness, and high cognition. The amount of change expected from this project is, in some categories, very large, and, in some instances, there may be a need to revise some criterion behaviors. Empirical data is being collected for use in modifying the criterion behaviors at a later time.

Data being reported was obtained using Flander's Interaction Analysis. This instrument is a classroom interaction observation tool which provides a measure of the emotional climate in the classroom, and it describes behavior in terms of the following ten categories: (1) accepts feeling, (2) praises or encourages, (3) accepts or uses ideas of students, (4) asks questions, (5) lecturing, (6) giving directions, (7) criticizing or justifying authority, (8) student talk - response, (9) student talk - initiation, and (10) silence or confusion. These categories are further defined in Table 1 in the Appendix.

The data being reported upon were gathered in September, 1968 (Pretest), December, 1968, and February, 1969. Data supporting the conclusions presented below appear in Figures 1 and 2 and Tables 2 through 21 in the Appendix. A great deal more data is available to interested persons through the project files.

The following conclusions are offered:

1. General -- The evidence strongly suggests that we are getting behavioral changes in the direction that we desire. In so doing, procedures are becoming clearly defined regarding ways to achieve our behavioral goals, and these procedures are different from our original hypotheses.

2. Student Talk - Response -- Two-thirds of the classrooms have significantly increased the number of student responses in the classroom, and two-thirds of the classrooms have exceeded the goal at this point in time. This is expected behavior at this time, and future evidence should show that teachers will trade student responses for students initiating discussion.

3. Student Talk - Initiation -- There has been a significant overall shift toward the goal, however, the amount of change has leveled off since December. The data indicate that two-thirds of the classrooms changed significantly from September to December and from December to February.

4. Accepts Feelings -- While none of the teachers have achieved the goal, there is movement in the desired direction. Past research evidence suggests that this category is very difficult to change, so that we expect greater change to come later in the year.

5. Praises or Encourages -- The teachers made gains toward the goal from September to December, but slipped back near original behavior from December to February. By December, nine teachers had made significant gains and three teachers had made significant decreases; by February, six teachers made significant gains and

six made significant decreases. We think that these changes are related to the way in which the teacher is getting high inquiry, self-direction, and high cognition in the classroom. Data to be available later in the year will give us answers to this question.

6. Accepts or Uses Ideas -- The teachers made gains toward the goal from September to December, and have now moved to a level below their starting point. This reversal was true for 93% of the teachers. This finding comes as a surprise and was puzzling at first. It begins to appear that the way to high cognition and inquiry is not through student talk followed by teacher praise, but through the kinds of questions asked combined with silence.
7. Asks Questions -- has experienced a great deal of movement in both directions from the criterion. Using a range of three points about the criterion, two, five, and four teachers are within the desired range of the goal for September, December and February, respectively.
8. Lecturing -- Two-thirds of the teachers have significantly decreased their lecturing behavior toward the desired goal. While the amount of change leveled off some from December to February, significant change did occur during that period.
9. Giving Directions -- The teachers started at the goal and have decreased the number of directions they are giving. We expected that teachers would be spending 1% of their time giving directions; perhaps, however, a self-directed classroom is able to function effectively without directions from the teacher.
10. Criticizing or Justifying Authority -- The teachers started the program at the goal of 1/2% criticism and have decreased to a point

where only four teachers find a need to criticize. Perhaps self-directed classrooms are so motivated that criticism is not required.

11. Silence or Confusion -- The teachers started the year with 7½% of the classroom time devoted to silence. We expected the amount of silence to decrease to 4%, however it has increased to nearly 8% on the average, and most of this behavior is silence rather than confusion. We are beginning to think that change in this direction is good, because it is beginning to appear that higher amounts of silence are related to higher levels of cognition. An analysis of the data in terms of cognitive behavior, which will take place later in the year, will give us evidence as to the extent to which this proposition is true.

Products

The following is a description of the products being developed on this project:

1. Interaction Analysis and Self-Analysis -- a 32-week inservice teacher course which aims to increase pupil inquiry, pupil independence, and cognition by teaching inservice teachers self-analysis using interaction analysis systems covering emotional climate, cognitive verbal behavior and inquiry behavior in the classroom. The course requires inservice teachers to spend ten hours per week, and it has been approved for six units of college credit to be applied toward a graduate degree. The course is divided into the following parts:

Part I: Orientation -- introduces the course, describes the setting, and defines self-directed learning and self-directed inquiry.

Part II: Emotional Climate in the Classroom -- teaches the use of Flander's Interaction Analysis for changing the emotional climate in the classroom in a direction that facilitates higher levels of inquiry, self-direction, and cognition.

Part III: Cognition in the Classroom -- teaches the use of the Pupil Inquiry Behavior Analysis Record as a means for increasing cognition in the classroom.

Part IV: Inquiry Behavior in the Classroom -- teaches the use of Cognitive Operations Monitored in the Classroom as a means for achieving the total range of inquiry behavior in the classroom.

Part V: Administration Handbook -- a handbook for use by administrators and supervisors in a school district which guides them through the procedures for planning and conducting a course of this nature.

Scheduled Availability: August 29, 1969.

2. Interaction Analysis and Behavioral Change -- reports behavioral changes resulting from the 32-week course. Reports changes in terms of the interaction analysis systems used in the project. Presents operational definitions of inquiry, self-direction, and cognition. Supplements the course materials by defining for

teachers and administrators the kinds of behavioral changes to expect at different points of the instruction.

Scheduled Availability: September 30, 1969.

3. Interaction Analysis and Inquiry -- reports changes in inquiry behavior achieved by students resulting from the teacher training course and measured by paper-and-pencil tests. Also reports the effect of focusing on the inquiry process upon the students acquisition of traditional content. Supplements the course materials by defining for teachers and administrators the kinds of effects such a course has upon pupils.

   Scheduled Availability: September 30, 1969

4. Interaction Analysis and Transfer of Inquiry -- reports the extent to which inquiry behavior learned in classrooms which facilitate its acquisition can be expected to transfer to other classrooms. Supplements the course materials by suggesting to teachers and administrators the spread of effect that such a course can have on students.

   Scheduled Availability: August 29, 1969.

5. Interaction Analysis and the Inner City -- reports the kind and extent of behavioral change taking place among socially deprived children. Suggests instructional approaches for the inner city for attaining increased inquiry, self-direction and cognition.

   Scheduled Availability: September 30, 1969.

6. Interaction Analysis and Teacher Personality -- reports relationships among up to 50 personality characteristics and behavioral change. Suggests relationships among personality characteristics,

behavioral change, and teaching styles used to achieve change. Supplements the course materials by suggesting to teachers and administrators ways in which behavioral change can be enhanced through teaching styles that are most suited to different teachers.

Scheduled Availability: October 31, 1969.

7. Interaction Analysis and Student Aptitude -- reports relationships among more than ten student aptitudes, classroom interaction, and inquiry. Reports the affect of such aptitudes upon behavioral change. Supplements the course materials by suggesting to teachers and administrators ways in which different groupings and teaching styles might enhance behavioral change.

   Scheduled Availability: November 28, 1969.

8. Interaction Analysis and Social Factors -- reports relationships among demographic (age, sex, etc.) and organizational (school size, organizational structure, etc.) variables and behavioral change. Suggests ways in which social learning theory can enhance behavioral change.

   Scheduled Availability: November 28, 1969.

9. Computer Programs -- are developing, testing, and fully documenting more than four computer programs which aid in scoring and reporting needed feedback information to teachers. Little to no modifications are required of these programs to use them on any computer having a FORTRAN IV compiler, and they give the Laboratory the beginnings of an onboard statistical analysis capability.

   Scheduled Availability: August 29, 1969.

Problems Encountered

The following is an itemization of the problems encountered to date:

1. The course was originally planned on the basis that sufficient video equipment would be available to conduct micro-teaching and other extensions of self-analysis. This equipment was not available to the project due to lack of funding.
2. Audio tape recorders were provided to each of the teachers for use in self-analysis. These are recorders that were purchased when the Laboratory first opened and they have experienced heavy use since that time. This year, they have been malfunctioning faster than they could be repaired--suggesting their worn out condition.
3. The lack of an on-board computer to provide for data processing has significantly retarded the transmission of needed feedback information to the teachers and the dissemination of this report.
4. Sufficient personnel and resources have not been available to accomplish the original project goals.

Appendix

Table 1

Definition of the Categories for
Flander's Interaction Analysis

TEACHER TALK	INDIRECT INFLUENCE	1. * ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included. 2. * PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included. 3. * ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category 5. 4. * ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5. * LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions. 6. * GIVING DIRECTIONS: directions, commands, or orders with which a student is expected to comply. 7. * CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
STUDENT TALK		8. * STUDENT TALK - RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9. * STUDENT TALK - INITIATION: talk by students, which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. * SILENCE OR CONFUSION: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

* There is NO scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate--not to judge a position on a scale.

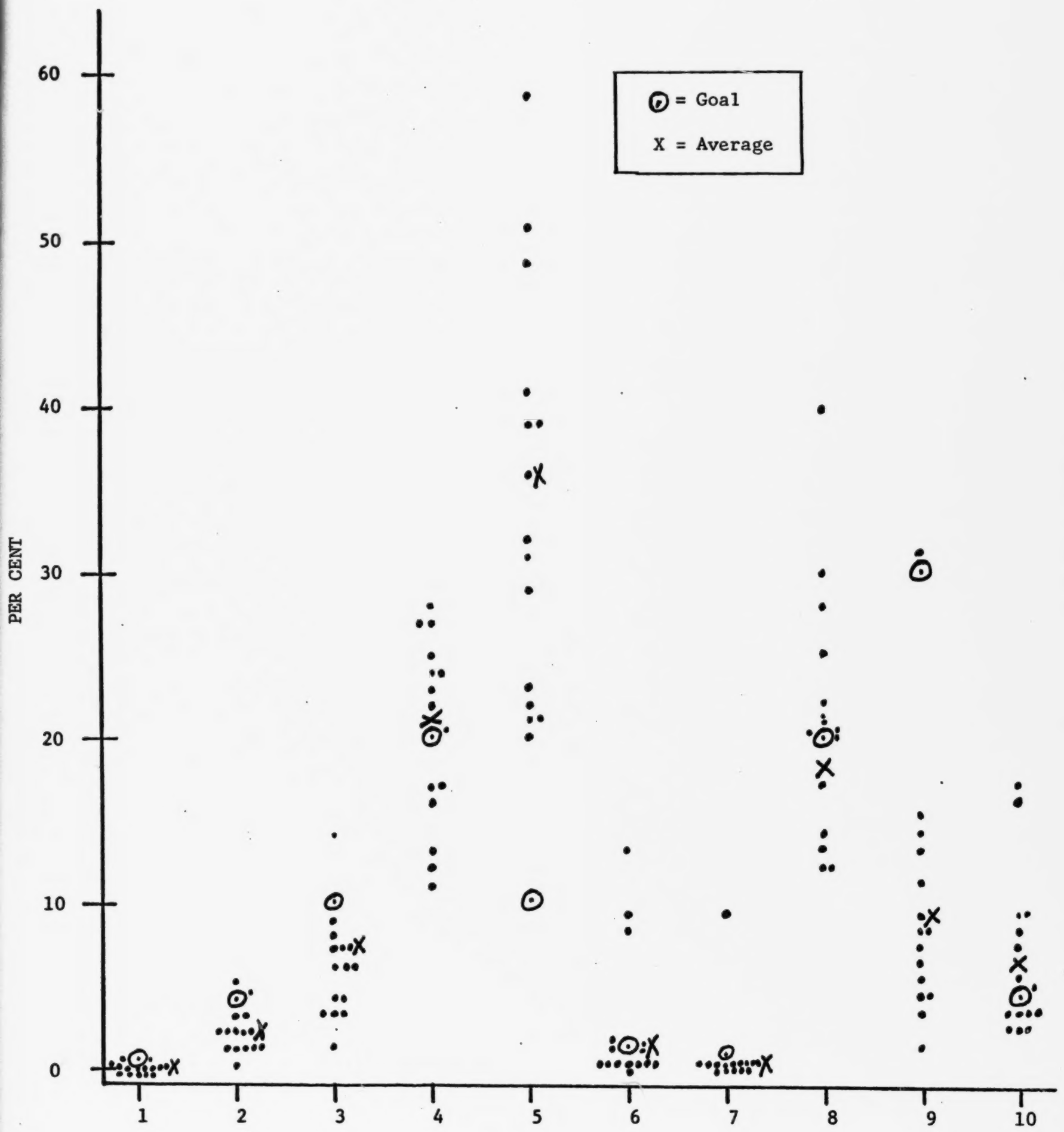

Fig. 1. Percent of interaction by Flanders category for December, 1968. Each dot represents the value for a teacher, the "X" represents the average value, and the "⊙" represents the defined goal.

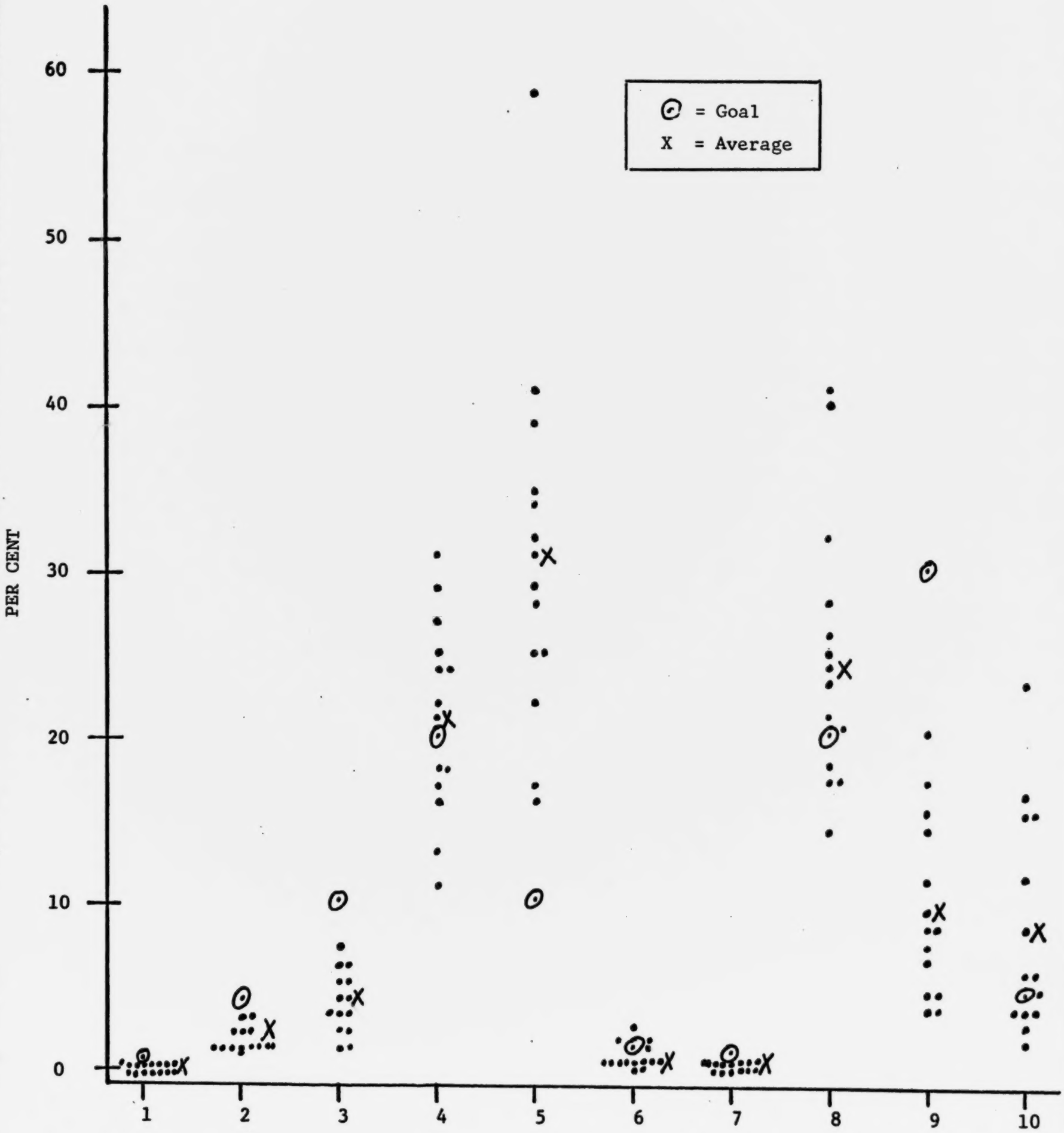

Fig. 2. Percent of interaction by Flanders category for February, 1969. Each dot represents the value for a teacher, the "X" represents the average value, and the "⊙" represents the defined goal.

Table # 2
ACCEPTS FEELING
(Goal = 0.5 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	0.00	0.00	0.00	0
2.	0.00	0.00	0.00	0
3.	0.00	0.00	0.00	0
4.	0.00	0.00	0.00	0
5.	0.00	0.00	0.00	0
6.	0.00	0.00	0.00	0
7.	0.00	0.00	0.00	0
8.	0.00	0.00	0.00	0
9.	0.00	0.00	0.00	0
10.	0.00	0.07	0.07	∞
11.	0.00	0.00	0.00	0
12.	0.00	0.00	0.00	0
13.	0.00	0.00	0.00	0
14.	0.00	0.09	0.09	∞
15.	0.00	0.00	0.00	0

Table # 3
PRAISES OR ENCOURAGES
(Goal = 4.0 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	1.57	1.64	0.08	5
2.	2.78	3.67	0.88	32
3.	1.11	1.48	0.37	33
4.	0.17	1.28	1.11	653
5.	2.58	5.42	2.84	110
6.	1.15	2.01	0.86	75
7.	1.30	2.50	1.20	92
8.	1.15	1.28	0.13	11
9.	1.70	1.54	-0.16	- 9
10.	0.61	0.99	0.38	62
11.	1.36	1.92	0.56	41
12.	1.34	0.77	-0.57	- 43
13.	0.09	1.46	1.37	1522
14.	0.96	0.77	-0.19	- 20
15.	3.54	1.80	-1.73	- 49

Table # 4
ACCEPTS OR USES IDEAS OF STUDENTS
(Goal = 10.0%)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	4.79	14.14	9.34	195
2.	5.71	5.50	-0.21	- 4
3.	2.83	5.92	3.09	109
4.	3.80	5.47	1.67	44
5.	5.32	6.51	1.19	22
6.	4.76	7.35	2.59	54
7.	3.90	5.65	1.76	45
8.	4.78	8.74	3.96	83
9.	2.46	2.71	0.25	10
10.	3.45	5.87	2.43	70
11.	2.81	3.29	0.48	17
12.	9.13	9.16	0.04	.4
13.	5.30	2.73	-2.57	48
14.	6.73	5.03	-1.70	- 25
15.	7.33	7.88	0.55	8

Table # 5
ASKS QUESTIONS
(Goal = 20.0%)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	24.61	23.87	- 0.74	- 3
2.	23.53	19.71	- 3.82	- 16
3.	36.10	27.62	- 8.48	- 23
4.	17.24	21.73	4.48	26
5.	24.94	26.53	1.59	6
6.	17.47	23.27	5.80	33
7.	24.91	21.87	- 3.04	- 12
8.	25.74	27.30	1.56	6
9.	25.40	12.25	-13.15	- 52
10.	14.91	10.47	- 4.43	- 30
11.	16.60	17.00	0.41	2
12.	26.13	19.18	- 6.95	- 27
13.	8.89	11.99	3.10	35
14.	27.00	27.62	0.62	2
15.	25.53	24.18	- 1.34	- 5

T_1 = 9/9/68 - 9/20/68
T_2 = 12/2/68 - 12/13/68
%D = %T_2 - %T_1
%G = %D/%T_1
D = Difference
G = Gain

Table # 6
LECTURING
(Goal = 10.0 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	37.33	21.43	-15.89	-43
2.	34.81	32.54	- 2.27	- 7
3.	34.38	20.59	-13.79	-40
4.	36.18	28.06	- 8.12	-22
5.	24.44	20.17	- 4.27	-17
6.	50.70	39.20	-11.50	-23
7.	49.11	49.40	0.28	1
8.	43.73	39.41	- 4.32	-10
9.	34.66	23.11	-11.55	-33
10.	63.89	52.72	-11.17	-17
11.	38.21	41.86	3.65	10
12.	31.41	40.84	9.43	30
13.	70.20	56.43	-13.76	-20
14.	49.04	29.41	-19.63	-40
15.	45.07	50.90	5.83	13

Table # 7
GIVING DIRECTIONS
(Goal = 1.0 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	1.47	0.53	-0.95	- 65
2.	2.18	0.53	-1.65	- 76
3.	0.20	0.00	-0.20	-100
4.	0.93	0.26	-0.67	- 72
5.	0.83	0.31	-0.52	- 63
6.	1.15	7.70	6.55	570
7.	3.07	0.09	-2.98	- 97
8.	0.10	0.13	0.04	40
9.	0.76	0.37	-0.40	- 53
10.	1.12	1.34	0.23	21
11.	1.96	0.24	-1.72	- 88
12.	0.29	0.86	0.57	197
13.	0.09	0.00	-0.09	-100
14.	0.00	1.62	1.62	∞
15.	0.25	0.00	-0.25	-100

Table # 8
CRITICIZING OR JUSTIFYING AUTHORITY
(Goal = 0.5 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	0.00	0.39	0.39	∞
2.	0.00	0.23	0.23	∞
3.	0.00	0.00	0.00	0
4.	0.00	0.00	0.00	0
5.	0.00	0.00	0.00	0
6.	0.00	0.00	0.00	0
7.	0.00	0.09	0.09	∞
8.	0.00	0.00	0.00	0
9.	0.00	0.07	0.07	∞
10.	0.00	0.00	0.00	0
11.	0.00	0.00	0.00	0
12.	0.19	0.09	-0.11	-58
13.	0.00	0.00	0.00	0
14.	0.56	0.00	-0.56	- ∞
15.	0.00	0.00	0.00	0

Table # 9
STUDENT TALK - RESPONSE
(Goal = 20.0 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	16.77	20.58	3.80	5
2.	18.42	21.24	2.82	15
3.	15.57	21.58	6.01	39
4.	19.95	18.48	- 1.47	- 7
5.	25.19	30.06	4.88	19
6.	18.79	12.16	- 6.62	- 35
7.	10.74	13.25	2.51	23
8.	14.83	17.42	2.59	17
9.	13.34	20.47	7.13	53
10.	7.71	24.42	16.71	217
11.	9.62	18.60	8.99	93
12.	17.10	14.64	- 2.46	- 14
13.	8.80	13.94	5.14	58
14.	8.65	15.17	6.52	75
15.	15.50	12.36	- 3.14	- 20

T_1 = 9/9/68 - 9/20/68
T_2 = 12/2/68 - 12/13/68
%D = %T_2 - %T_1
%G = %D/%T_1
D = Difference
G = Gain

Table # 10
STUDENT TALK - INITIATION
(Goal = 30.0 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	7.19	8.35	1.16	16
2.	9.47	13.60	4.12	44
3.	0.30	13.44	13.14	4380
4.	4.65	7.61	2.96	64
5.	7.81	7.46	- 0.36	- 5
6.	0.66	5.95	5.29	802
7.	1.89	4.26	2.37	125
8.	3.54	3.63	0.09	3
9.	6.20	32.87	26.67	333
10.	2.43	1.98	- 0.45	- 19
11.	21.36	14.27	- 7.09	- 33
12.	5.86	11.22	5.36	91
13.	3.23	9.65	6.42	199
14.	0.00	3.24	3.24	∞
15.	0.00	1.34	1.34	∞

Table # 11
SILENCE OR CONFUSION
(Goal = 4.0 %)
December, 1968

T#	%T_1	%T_2	%D	%G
1.	6.27	9.07	2.81	45
2.	3.08	2.98	- 0.10	- 3
3.	9.50	9.37	- 0.13	- 1
4.	17.08	17.11	0.03	.1
5.	8.89	3.53	- 5.36	- 60
6.	5.33	2.36	- 2.97	- 56
7.	5.08	2.87	- 2.20	- 43
8.	6.12	2.08	- 4.04	- 66
9.	15.46	6.60	- 8.86	- 57
10.	5.88	2.12	- 3.76	- 64
11.	8.09	2.81	- 5.28	- 65
12.	8.55	3.25	- 5.30	- 62
13.	3.41	3.80	0.39	11
14.	7.05	17.05	10.00	142
15.	2.78	1.54	- 1.24	- 45

Table # 12
ACCEPTS FEELING
(Goal = 0.5 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	0.00	0.00	0.00	0
2.	0.00	0.00	0.00	0
3.	0.00	0.09	0.09	∞
4.	0.00	0.00	0.00	0
5.	0.00	0.00	0.00	0
6.	0.00	0.00	0.00	0
7.	0.00	0.00	0.00	0
8.	0.00	0.07	0.07	∞
9.	0.00	--	--	--
10.	0.07	0.00	-0.07	- ∞
11.	0.00	0.00	0.00	0
12.	0.00	0.07	0.07	∞
13.	0.00	0.00	0.00	0
14.	0.09	0.00	-0.09	- ∞
15.	0.00	0.00	0.00	0

Table # 13
PRAISES OR ENCOURAGES
(Goal = 4.0 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	1.64	0.97	- 0.67	- 40
2.	3.67	1.97	- 1.70	- 46
3.	1.48	3.10	1.62	109
4.	1.28	0.77	- 0.51	- 56
5.	5.42	1.18	- 4.24	- 78
6.	2.01	0.44	- 1.57	- 78
7.	2.50	1.03	- 1.47	- 59
8.	1.28	1.10	- 0.18	- 14
9.	1.54	--	--	--
10.	0.99	1.00	0.01	1
11.	1.92	2.51	0.59	31
12.	0.77	1.40	0.63	82
13.	1.46	1.91	0.45	31
14.	0.77	1.38	0.61	79
15.	1.80	2.38	0.58	32

T_2 = 12/2/68 - 12/13/68
T_3 = 2/10/69 - 2/21/69
%D = %T_3 - %T_2

%G = %D/%T_2
D = Difference
G = Gain

Table # 14
ACCEPTS OR USES IDEAS OF STUDENTS
(Goal = 10.0%)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	14.14	5.31	- 8.83	- 62
2.	5.50	2.34	- 3.16	- 57
3.	5.92	3.37	- 2.55	- 43
4.	5.47	4.53	- 0.94	- 17
5.	6.51	3.14	- 3.37	- 52
6.	7.35	2.21	- 5.14	- 70
7.	5.65	3.90	- 1.75	- 31
8.	8.74	6.43	- 2.31	- 26
9.	2.71	--	--	--
10.	5.87	3.28	- 2.59	- 44
11.	3.29	2.59	- 0.70	- 21
12.	9.16	3.96	- 5.20	- 57
13.	2.73	0.88	- 1.85	- 68
14.	5.03	7.21	2.18	43
15.	7.88	5.98	- 1.90	- 24

Table # 15
ASKS QUESTIONS
(Goal = 20.0%)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	23.87	18.32	- 5.55	- 23
2.	19.71	18.20	- 1.51	- 8
3.	27.62	30.76	3.14	11
4.	21.73	24.27	2.54	12
5.	26.53	20.86	- 5.67	- 21
6.	23.27	22.36	- 0.91	- 4
7.	21.87	29.13	7.26	33
8.	27.30	24.40	- 2.90	- 11
9.	12.25	--	--	--
10.	10.47	16.88	6.41	61
11.	17.00	16.26	- 0.74	- 4
12.	19.18	13.29	- 5.89	- 31
13.	11.99	10.70	- 1.29	- 11
14.	27.62	25.12	- 2.50	- 9
15.	24.18	27.11	2.93	12

Table # 16
LECTURING
(Goal = 10.0 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	21.43	31.34	12.84	60
2.	32.54	16.52	-16.02	- 49
3.	20.59	24.65	4.06	20
4.	28.06	16.07	-11.99	- 43
5.	20.17	27.37	7.20	36
6.	39.20	35.42	- 3.78	- 10
7.	49.40	25.00	-24.40	- 49
8.	39.41	39.15	- 0.26	- 1
9.	23.11	--	--	--
10.	52.72	58.81	6.09	12
11.	41.86	40.85	- 1.01	- 2
12.	40.84	21.59	-19.25	- 47
13.	56.43	32.26	-24.17	- 43
14.	29.41	29.01	- 0.40	- 1
15.	50.90	33.97	-16.93	- 33

Table # 17
GIVING DIRECTIONS
(Goal = 1.0 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	0.53	0.22	- 0.31	- 58
2.	0.53	0.22	- 0.31	- 58
3.	0.00	0.62	0.62	∞
4.	0.26	0.17	- 0.09	- 35
5.	0.31	0.24	- 0.07	- 23
6.	7.70	0.59	- 7.11	- 92
7.	0.09	2.18	2.09	2322
8.	0.13	0.07	- 0.06	- 46
9.	0.37	--	--	--
10.	1.34	0.07	- 1.27	- 95
11.	0.24	0.08	- 0.16	- 67
12.	0.86	0.81	- 0.05	- 6
13.	0.00	0.00	0.00	0
14.	1.62	0.49	- 1.13	- 70
15.	0.00	0.00	0.00	0

T_2 = 12/2/68 - 12/13/68
T_3 = 2/10/69 - 2/21/69
%D = %T_3 - %T_2

%G = %D/%T_2
D = Difference
G = Gain

Table # 18
CRITICIZING OR JUSTIFYING AUTHORITY
(Goal = 0.5 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	0.39	0.00	- 0.39	- ∞
2.	0.23	0.00	- 0.23	- ∞
3.	0.00	0.00	0.00	0
4.	0.00	0.00	0.00	0
5.	0.00	0.00	0.00	0
6.	0.00	0.00	0.00	0
7.	0.09	0.00	- 0.09	- ∞
8.	0.00	0.00	0.00	0
9.	0.07	--	--	--
10.	0.00	0.00	0.00	0
11.	0.00	0.00	0.00	0
12.	0.09	0.07	- 0.02	- 22
13.	0.00	0.00	0.00	0
14.	0.00	0.00	0.00	0
15.	0.00	0.00	0.00	0

Table # 19
STUDENT TALK - RESPONSE
(Goal = 20.0 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	20.58	20.72	0.14	1
2.	21.24	40.72	19.48	92
3.	21.58	25.53	3.95	18
4.	18.48	17.18	- 1.30	- 7
5.	30.06	31.61	1.55	5
6.	12.16	17.49	5.33	44
7.	13.25	18.00	4.75	36
8.	17.42	23.01	5.59	32
9.	20.47	--	--	--
10.	24.42	14.13	-10.29	- 42
11.	18.60	25.29	6.69	36
12.	14.64	27.97	13.33	91
13.	13.94	40.18	26.24	188
14.	15.17	19.94	4.77	31
15.	12.36	23.91	11.55	93

Table # 20
STUDENT TALK - INITIATION
(Goal = 30.0 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	8.35	8.00	- 0.35	- 4
2.	13.60	17.18	3.58	26
3.	13.44	7.36	- 6.08	- 45
4.	7.61	14.19	6.59	87
5.	7.46	4.39	- 3.07	- 41
6.	5.95	19.63	13.68	230
7.	4.26	5.50	1.24	29
8.	3.63	4.38	0.75	21
9.	32.87	--	--	--
10.	1.98	2.61	0.63	32
11.	14.27	7.62	- 6.65	- 47
12.	11.22	15.27	4.05	36
13.	9.65	11.44	1.79	19
14.	3.24	8.67	5.43	168
15.	1.34	2.92	1.58	118

Table # 21
SILENCE OR CONFUSION
(Goal = 4.0 %)
February, 1968

T#	%T_2	%T_3	%D	%G
1.	9.07	15.11	6.04	67
2.	2.98	2.85	- 0.13	- 4
3.	9.37	4.52	- 4.85	- 52
4.	17.11	22.82	5.71	33
5.	3.53	11.22	7.69	218
6.	2.36	1.85	- 0.51	- 22
7.	2.87	15.25	12.38	431
8.	2.08	1.39	- 0.69	- 33
9.	6.60	--	--	--
10.	2.12	3.22	1.10	52
11.	2.81	4.79	1.98	70
12.	3.25	15.57	12.32	379
13.	3.80	2.64	- 1.16	- 31
14.	17.05	8.18	- 8.87	- 52
15.	1.54	3.74	2.20	143

T_2 = 12/2/68 - 12/13/68
T_3 = 2/10/69 - 2/21/69
%D = %T_3 - %T_2

%G = %D/%T_2
D = Difference
G = Gain